FEDERAL STUDENT AID

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FSA Modernization Partner

NSLDS II Reengineering Implementation Plan

Version 1.0

July 19, 2002

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Document Control

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1.0	Initial Issue	July 19, 2002	Jason Patton

1 Overview

1.1 Background

The National Student Loan Data System (NSLDS) was established as part of the Higher Education Act of 1965, as amended, to provide a comprehensive repository of information about Title IV recipients and their loans, grants, lenders, guaranty agencies, servicers, and schools. Currently, NSLDS is hampered by a number of challenges related to discrepancies between the quality and timeliness of data feeds and the system of record, and its operating costs.

Given these challenges, a project to modernize the system – NSLDS Reengineering – has been undertaken to improve financial and data integrity, reduce operational costs, and improve customer satisfaction. At the heart of the design for a reengineered NSLDS solution are five "big ideas" for radically changing the underlying processes, data structures, and technical platforms supporting the existing system:

- Data Warehousing
- Internal FSA (Federal Student Aid) Direct Access
- Outsourced Enrollment Tracking
- Financial Partner Data Feed Reengineering
- Common Record Extension

The first phase of the NSLDS Reengineering effort is called NSLDS II. NSLDS II Release 1 will focus on the Data Warehousing and Internal FSA Direct Access opportunities, as well as assessing ways to support existing requirements through NSLDS II or other modernized systems. Later phases or releases of work will focus on the remaining three ideas.

This Implementation Plan covers the activities required to successfully deploy and implement the NSLDS II Release 1 solution.

1.2 Objectives

The Implementation Plan for NSLDS II Release 1 supports the following core objectives:

- Define the timeline for the construction and deployment phases of work.
- Describe the phased approach for deploying NSLDS II.
- Document the core business capabilities that will be included within Release 1.
- Identify the required resources and skills.
- Define project risks and mitigation strategies.

The Implementation Plan is a working document and may change as the project progresses through each phase.

2 Implementation Timeline

The migration of the legacy NSLDS to the reengineered NSLDS II is tentatively scheduled for completion in September 2003. The legacy NSLDS will be used until the new solution is implemented, and will then be retired.

The high-level implementation timeline for the NSLDS II Release 1 project is shown below.

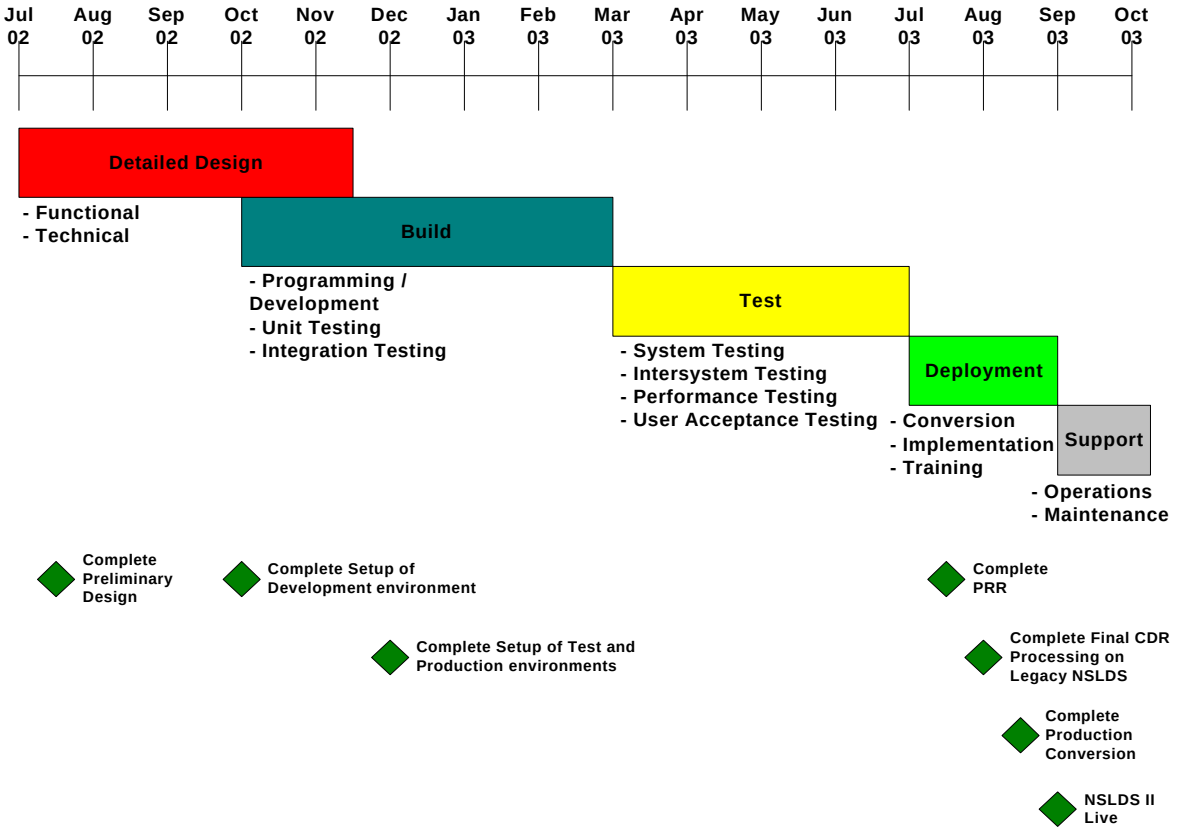

Figure 1, NSLDS II High Level Implementation Timeline

The Construction phase includes Detailed Design, Build, and Test. The goal of Detailed Design is to further define the solution outlined in Preliminary Design and provide the information necessary to develop NSLDS II. During Build, the solution is developed to meet the requirements and specifications outlined in Detailed Design. Finally, the solution is tested and accepted by both the Modernization Partner (MP) and FSA prior to deployment to production.

The Deployment phase serves as the transition from development and acceptance to production. At the conclusion of the Deployment phase, the new system is considered "In Production" and the Support phase commences.

The key milestones in the implementation of NSLDS II are:

Date	Milestone
July 2002	- Complete the Preliminary Design phase - Complete Development environment requirements
September 2002	- Complete Production and Test environment requirements
October 2002	- Complete setup of Development environment
November 2002	- Complete the Detailed Design phase
December 2002	- Complete setup of Production and Test environments
February 2003	- Complete the Build phase
June 2003	- Complete the Test phase
July 2003	- Complete Production Readiness Review (PRR)
August 2003	- Complete Cohort Default Rate processing using the legacy NSLDS and begin appeals process - Freeze updates to the legacy NSLDS and copy the required tables for conversion - Convert the copied legacy NSLDS tables, load the data into the NSLDS II database, and verify the converted data
September 2003	- Implement NSLDS II as the system of record - Retire the legacy NSLDS - Complete the transition of system maintenance and call center responsibilities

Table 1, NSLDS II Release 1 Project Milestones

To reach these milestones, NSLDS II has the following interdependencies with FSA and Modernization Partner initiatives:

Item	External Dependency	Responsibility
Enterprise Application Integration (EAI) Infrastructure	The Modernization Partner NSLDS II Team requires the EAI development environment to be in place by October 1, 2002 to support the construction of the NSLDS II interfaces for the EAI Bus. The production and test environments for EAI must be in place by December 1, 2002.	Modernization Partner

Item	External Dependency	Responsibility
CSfB	The Debt Collection System (DCS) is currently being looked at as part of FSA's Common Servicing for Borrowers (CSfB) initiative. Due to very recent changes in scope and timelines for efforts to reengineer DCS, its impact on NSLDS II is still uncertain. The NSLDS II team will work with CSfB project staff to determine potential interface impacts resulting from the eventual rollout of CSfB. As part of the first release of NSLDS II, submission of data weekly in tape format from DCS will be supported. Additional short-term initiatives to change the DCS to NSLDS II file transmission mechanism from tape to flat file over the EAI Bus will be investigated.	FSA and Modernization Partner
CRM4FSA	Discussions have taken place to possibly include an interface between CRM4FSA and NSLDS II beginning with CRM4FSA Release 4, currently scheduled for November 2003 (post Release 1). In addition, it is assumed that the cost and operation of the Tier 1 and Tier 2 (as jointly defined by the NSLDS II and CRM4FSA teams) help desk for NSLDS II will transition to the CRM4FSA framework by May 2004, if not sooner. In the interim, a NSLDS II call center will be created as part of this release. It will be online at the time of implementation to handle NSLDS II specific trouble calls. Transition of resources from this call center to support the migration of services to CRM4FSA will also be coordinated.	FSA and Modernization Partner

Table 2, NSLDS II Dependent Initiatives

3 NSLDS II System Development Methodology

The NSLDS II Reengineering project uses the methodology documented in the FSA Solution Life Cycle (SLC) Process Guide to guide the development effort.

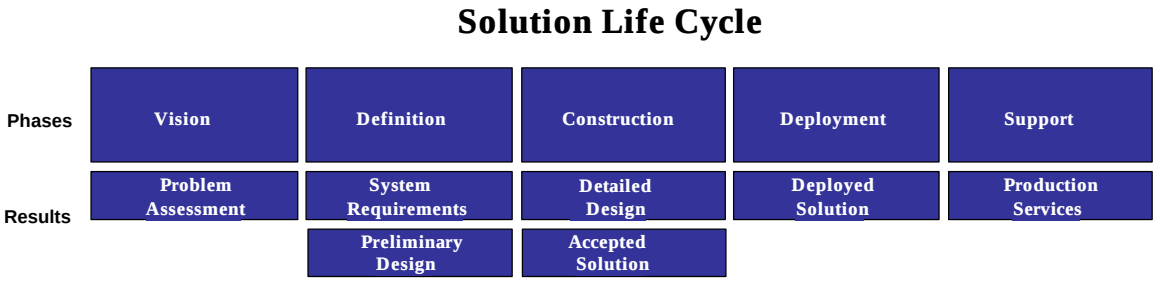

Figure 2, Solution Life Cycle Process

The SLC is organized at its highest level into five phases: Vision, Definition, Construction, Deployment, and Support.

3.1 Vision Phase

The objective of the Vision phase is to understand the specific issue(s) facing FSA. During this phase, the Modernization Partner will conduct an assessment of the business problem or opportunity, articulate a recommended solution in a Business Case, plan the acquisition of the solution identified in the Business Case, and form an Integrated Product Team (IPT).

This is the phase in which solution planning is performed, and the primary drivers for the remaining phases (i.e., business objectives, performance goals) are defined. This phase was completed for NSLDS II Release 1 in February 2002.

3.2 Definition Phase

The objective of the Definition phase is to establish and document the requirements and preliminary design necessary to develop, test, and deploy the solution that will provide the benefits outlined in the Business Case.

In this phase, further detail for the construction of the solution (i.e., requirements, preliminary design) is defined. This phase was completed for NSLDS II Release 1 in July 2002.

3.3 Construction Phase

The Construction phase will design, develop, and test the NSLDS II Release 1 solution to verify it meets the requirements and acceptance criteria defined in the Definition Phase, as well as the system objectives outlined in the Business Case.

The Construction phase is where the Preliminary Design is further refined into a Detailed Design, and where the team builds the solution. Finally, the solution is tested to verify the design and validate the requirements.

3.3.1 Detailed Design

The following table highlights the major tasks that are scheduled for completion during the Detailed Design stage and the responsible party involved. These tasks do not necessarily imply a separate deliverable, rather tasks that should be addresses within the stage.

DETAILED DESIGN STAGE			
Task	**Description**	**FSA**	**MP**
FSA Internal NSLDS II Screen and Report Design	This document describes the NSLDS II screens and reports that will be used by FSA and includes the screen and report layouts.		✓
Development Architecture Design	This document builds upon the system architecture diagrams from the Preliminary Design and provides the detailed NSLDS II development architecture, including the hardware, software, access methods, and protocols used.		✓
Physical Data Model Design	This document provides the information to build the NSLDS II data warehouse.		✓
Conversion Design	This document builds upon the Preliminary Design and further defines the data extract, transformation, and load processes.		✓
System Interface Design	This document provides the specific details of the NSLDS II interfaces with its internal and external interface systems.		✓
Production Architecture Design	This document builds upon the system architecture diagrams from the Preliminary Design and provides the detailed NSLDS II production architecture, including the hardware, software, access methods, and protocols used. The design specification further outlines actual sites, minimum configuration requirements, and site requirements (size, power, temperature, etc.).		✓
Operations Architecture Design	This document builds upon the system architecture diagrams from the Preliminary Design and provides the detail needed to support operation of the solution in an efficient manner.		✓
Security Design	This document provides detailed information on security requirements relating to facility, physical access, system access, administrative privileges, sensitive and mission-critical operations, site-specific practices, and other matters.	✓	✓

Table 3, Detailed Design Tasks

The following assumptions have been made with regard to the Detailed Design effort. Any deviations from these assumptions may impact the implementation schedule.

- The NSLDS II Implementation Plan officially begins upon the start of the Detailed Design phase, scheduled for July 2002.
- A 90-day lead-time is required from the FSA hosting site funding approval date to the completion of the Development, Test, and / or Production Environment setups.
- IBM will loan a database server (including DB2 EEE software) to the Modernization Partner for use as the Database Development Environment prior to Fiscal Year 2003. Once this server is received at the FSA hosting site, a 45-day-lead-time is required to complete the setup and installation of this environment. IBM will provide this server to the FSA hosting site no later than mid-August 2002 in order to have an operational Database Development Environment for use by the NSLDS II team by October 1st, 2002.
- It is assumed that the FSA hosting site will be the Virtual Data Center (VDC), located in Meridan, Connecticut.

3.3.2 Build

The following table highlights the major tasks that are scheduled for completion during the build stage and the responsible party involved. These tasks do not necessarily imply a separate deliverable, rather tasks that should be addresses within the stage.

BUILD STAGE			
Task	**Description**	**FSA**	**MP**
Acquire Physical Environment Assets and Services	This task includes the procurement of the hardware and software required for the development, test, and production environments.		✓
Build and Test Technical Infrastructure	Includes steps to build the components of the Technology Infrastructure, including the development, test, and production environments, as well as the design of the network, communication, and computing platforms.	✓	✓
Build Databases	This task involves the creation of the development, test, and production environment databases.	✓	✓
Build Application	Building of the application involves the development of the functional screens, reports, calculations, interface logic, etc.		✓
Build EAI Solution	The development of the EAI solution will include the NSLDS II connection to the EAI Bus, along with the Bus connection of selected internal FSA systems (those that previously used FTP as the transfer method).		✓
Develop and Execute Unit Test Scripts	Unit testing is performed by the application development team to test the functionality and technical components at the programming unit level.		✓

BUILD STAGE			
Task	**Description**	**FSA**	**MP**
Develop and Execute Integration Test Scripts	Integration testing is performed on groups of dependent modules by the development team to test the compatibility of related components to verify that they function properly when integrated.		✓
Acquire Equipment and Services Required for Customer Call Center Setup	This task includes the procurement of the equipment and services required for the establishment of the NSLDS II Customer Call Center.		✓

Table 4, Build Tasks

The following assumptions have been made with regard to the Build effort. Any deviations from these assumptions may impact the implementation schedule.

- Any changes to regulations or statutes will take up to 18 months to enact. At this time, no major regulatory changes have been enacted that will affect the implementation of NSLDS II in September 2003.
- Impacts to other FSA business processes and systems will be minimal since NSLDS II will continue use of existing legacy record formats and will interface with the EAI Bus.
- Informatica will be used to convert legacy format interface files sent by interface systems and load the data into NSLDS II.
- The use of FTP as a transfer mechanism will not be supported by NSLDS II. Internal FSA interfaces currently using FTP will be required to use the EAI Bus.
- An integrated customer service approach will be required to support each Title IV program. The Modernization NSLDS II team will work with CRM4FSA regarding future inclusion into their product.

3.3.3 Test

The NSLDS II test approach is based on the software development V-Model approach, along with the concepts of phase containment and entry and exit criteria. The NSLDS II Release 1 test effort will contain six test phases: unit testing, integration testing, system testing, intersystem testing, performance testing, and user acceptance testing. Unit and integration testing are performed during the Build stage, while system, intersystem, performance, and user acceptance testing are conducted during the Test stage.

The following table highlights the major tasks that are scheduled for completion during the Test stage and the responsible party involved. These tasks do not necessarily imply a separate deliverable, rather tasks that should be addresses within the stage.

TEST STAGE			
Task	**Description**	**FSA**	**MP**
Develop and Execute System Test Scripts	System testing is performed across programming units by the Modernization Partner test team to verify that units work together correctly.		✓
Section 508 requirements tested and verified	The Department of Education (ED) Assistive Technology Group will conduct an accessibility review / Section 508 Testing on the front-end screens and reports with the assistance of the Modernization Partner test team. The purpose of the review is to verify that persons with disabilities may perform the necessary processes of the NSLDS II system.	✓	✓
Develop and Execute Intersystem Test Scripts	Intersystem testing tests the compatibility of the NSLDS II interfaces with the system's internal and external interface systems. FSA will be responsible for coordination with the interface systems during the intersystem test, while the Modernization Partner test team will execute the test along with representatives from the interfacing system.	✓	✓
Develop and Execute Performance Test Scripts	Performance testing is performed by the Modernization Partner test team and verified that the system's environment will support the detailed performance requirements.		✓
Develop and Execute User Acceptance Test Scripts	User acceptance testing serves as a final functional test to verify that the system meets user requirements and expectations. Test scripts will be prepared by the Modernization Partner test team and will be provided to FSA for review and feedback. The User Groups will then run these pre-defined scripts with assistance from the Modernization Partner test team.	✓	✓
Test Analysis Report	The objective of the Test Analysis Report (TAR) is to summarize the completed test effort and to document the scope of the test, the System Incident Reports noted, and any remaining open issues.		✓
Develop Training	This task involves the development of training courses, user procedures, references, job aids, etc. to assist with the operation of the system.	✓	✓

Table 5, Test Tasks

The following assumptions have been made with regard to the Test effort. Any deviations from these assumptions may impact the implementation schedule.

Global Assumptions

- Any System Investigation Request not captured in the requirements or design documentation will be documented as an enhancement and staged for a future release, unless the Modernization Partner and FSA agree upon its inclusion.
- The development, test, and production environments will be located at the FSA hosting site.
- The development, test, and production environments will be available 24 hours per day x 7 days per week with the exception of planned maintenance efforts.
- The development and test environments will mimic the production environment's hardware and software requirements.
- The environments at the FSA hosting site will be accessible by all project resources (Development and Test).
- Testers must have IDs with read and update access to the system. These IDs will allow testers to view contents of the database tables for verification of test results, and to manipulate the test data in the database in order to component test the modules.
- Test conditions will be defined and agreed upon within the Detailed Design phase.
- Exit criteria will be followed to advance from one test phase to the next.
- A common tool will be used to capture System Investigation Requests. This tool will be developed using Rational ClearQuest.
- Testing of the data conversion from the legacy NSLDS system to the NSLDS II data structure is documented in **Section 3.3.4 Data Conversion**.
- Testing of the legacy NSLDS mainframe solution will not be performed during NSLDS II Release 1. The production implementation of NSLDS II Release 1 will allow for the retirement of the mainframe.
- The tasks for the development of training encompass the development of policies, procedures, user guides and training classes. Development of Computer Based Training (CBT) is not included in these steps.

Intersystem Test (IST) Assumptions

- FSA will be responsible for organizing the internal and external participation for the intersystem test, and that the various participants remain on schedule.
- The intersystem test will only test limited transactions with the internal and external interface systems.
- The internal and external interface systems are responsible for creating the test data they send to NSLDS II, based on specifications provided by the Modernization Partner team.
- The intersystem test will require that fixes to System Investigation Requests are re-tested using local copies of the original input files.
- Connectivity to the NSLDS II environments will be enabled for the internal and external interface systems during the IST for the transfer and receipt of test files.
- The intersystem test will require that files are transferred between systems using communication protocols resembling those that will exist in production for NSLDS II.

User Acceptance Test (UAT) Assumptions

- UAT will be based on written, mutually agreed-upon scripts, which will be provided to FSA for review and feedback and sign-off. This effort will provide expected results, repeatable testing conditions, and defined exit criteria.

- User groups will be available to execute testing in accordance with the approved schedule.
- FSA will be responsible for organizing the internal and external participation for the user acceptance tests.

3.3.4 Data Conversion

The following table highlights the major tasks that are scheduled for the Build and Test efforts associated with the conversion of the legacy NSLDS database to the new warehouse structure and the responsible party involved. These tasks do not necessarily imply a separate deliverable, rather tasks that should be addresses within the stage.

DATA CONVERSION			
Task	**Description**	**FSA**	**MP**
Build Conversion Programs	This task includes the development of conversion related programs.		✓
Conversion Unit Test	The unit testing of the data conversion will include a combination of data selects, file formatting, and file transfers that will be used to verify the data being extracted is accurate and in the correct format.		✓
Conversion System Test	System testing allows for high-level validation of the Extract, Transform, and Load (ETL) process. The objectives of the conversion system test are to discover and fix any errors in the data load and to minimize the overall process time.		✓

Table 6, Data Conversion Tasks

The following assumptions have been made with regard to the Data Conversion effort. Any deviations from these assumptions may impact the implementation schedule.

- Key resources from across the functional areas and from Raytheon will be available during the design and testing processes.
- Informatica PowerCenter 5.1 will be selected as the ETL Tool.
- The Informatica PowerCenter 5.1 software will be available prior to the data conversion build.
- Informatica PowerConnect will be used to access legacy NSLDS data.
- Raytheon will create an instance of the NSLDS Active and STAB database that contains the NSLDS tables to be converted prior to the conversion.
- The interface files loaded into NSLDS after the new instance has been generated will be available and stored for loading into NSLDS II.
- A method for accessing archived data from NSLDS II will be available and NSLDS data for closed loan-level student/borrower information will be archived in NSLDS II.
- The interface modules will be used to load data into NSLDS II from external and internal interfaces during the data conversion.

- The Modernization Partner NSLDS II team will work with the legacy NSLDS team and the FSA hosting site to track and record the updates made to the legacy NSLDS through the NSLDS Financial Aid Professional web site, CICS, and by the Raytheon Quality Assurance Team during the initial conversion cycle.

3.4 Deployment Phase

The objective of the Deployment phase is to place the system in production and enable the organizational adoption of the solution. The Deployment phase transitions a system from Construction to Support by implementing the accepted solution. At the conclusion of the Deployment phase, the new system is considered "In Production" and the Support phase commences.

During the Deployment phase, it is necessary to:

- Assess the production readiness of the system
- Train the workforce on the new system
- Complete the setup of the NSLDS II Call Center
- Convert the legacy production database to the new warehouse structure
- Deploy the application and technical solution to the production environment
- Conduct an operational readiness test
- Activate the business capabilities within the production environment
- Retire the legacy NSLDS system

The following table highlights the major tasks that are scheduled for completion during the Deployment phase and the responsible party involved. These tasks do not necessarily imply a separate deliverable, rather tasks that should be addresses within the phase.

DEPLOYMENT			
Task	**Description**	**FSA**	**MP**
Production Readiness Review	The Production Readiness Review will highlight the major activities of the Vision, Definition, and Construction phases, and assess the readiness of the solution for deployment.	✓	✓
Operations Documentation	The operations documentation will be prepared for the FSA hosting site and may include a Responsibility Matrix, Call Out List, Operations Checklist, Run Book, Installation Guidelines, Diagnostics List, etc, as required by the hosting contractor.		✓
System Security Documentation	System Security documentation will be prepared by the Modernization Partner and FSA. This documentation includes items such as: the application security requirements, rules of behavior for system users, personnel security classifications, disaster recovery / continuity of operations plan, data integrity / validation controls, audit trails, security risk assessment, etc, as required by FSA.	✓	✓

DEPLOYMENT			
Task	**Description**	**FSA**	**MP**
Transition to Support (TTS) Knowledge Transfer Plan	The purpose of the TTS Knowledge Transfer Plan is to provide detailed information of the solution and its components to the operations contractor for support following implementation.		✓
Train Workforce	This task includes the rollout of the training courses, user procedures, references, job aids, etc. developed during the Build stage, in addition to communication and marketing activities for the new system.	✓	✓
Update Conversion and Application code for the production environment	Verify the conversion and application code contains references to the production file structures, URLs, databases, interfaces, etc.		✓
Perform Data Conversion of the legacy NSLDS database	The NSLDS data will be converted to the NSLDS II database structure. This includes the extract, transformation, and loading of legacy data into NSLDS II.	✓	✓
Deploy Physical Environment	Manage the deployment of changes to facilities, equipment, and other physical assets, and deploy the technology infrastructure components.	✓	✓
Deploy the NSLDS II Application	Migrate the new application into the production environment.	✓	✓
Plan and Execute Operational Readiness Test	Plan and execute a test within the production environment to verify that the application is correct and ready for implementation.	✓	✓
Implement NSLDS II Release 1	Upon completion of the operational readiness test, implement the NSLDS II solution in the production environment as the system of record.	✓	✓
Retire the legacy NSLDS system	The legacy NSLDS system will be retired upon successful implementation of NSLDS II Release 1.	✓	✓
Setup Call Center and Transition Responsibilities	Complete the call center setup, train the customer service representatives, and begin receiving trouble calls upon the implementation of NSLDS II Release 1.	✓	✓

Table 7, Deployment Tasks

The following assumptions have been made with regard to the Deployment effort. Any deviations from these assumptions may impact the implementation schedule.

- For deployment, a new physical environment will not be created for production since the NSLDS II production environment will have been operated in test mode for conversion and performance testing. Rather, the environment will need to be cleansed of the test code, data, etc. and then refreshed.

- FSA trainers will learn the training through "Train the Trainer" sessions, provided by the Modernization Partner team. FSA will then provide the training and education programs to the user community.
- It is assumed that the cost and operation of the Tier 1 and Tier 2 (as jointly defined by the NSLDS II and CRM4FSA teams) help desk for NSLDS II will transition to the CRM4FSA framework by May 2004, if not sooner. In the interim, a NSLDS II call center will be created as part of this release. It will be online at the time of implementation to handle NSLDS II specific trouble calls. Transition of resources from this call center to support the migration of services to CRM4FSA will also be coordinated.

3.5 Support Phase

The objective of the Support phase is to operate and maintain the new business capabilities that were created and deployed as part of the NSLDS II Release 1 solution. The work in this phase must meet the formal service targets and metrics established for support. It must also establish mechanisms for providing feedback for improvements based on measurements of actual performance against those targets. The Support phase applies to information systems and related system engineering activities associated with the deployed solution.

The Implementation Plan does not contain tasks for operating the system beyond Deployment.

4 NSLDS II Core Business Capabilities

The functionality for NSLDS II is grouped into 10 core capabilities:

- Student Aid Eligibility
- Financial Aid History
- Student Transfer Monitoring
- Loan Transfer Tracking
- FP Payment / Payment Reasonability
- Cohort Default Rate Calculation and Distribution
- Enrollment Tracking / Reporting
- Audit and Program Review
- Research and Policy Development
- Budget Formulation and Execution

A description of each capability is provided within the NSLDS II Preliminary Design: System Requirements – Revised document.

5 Migration Strategy

The migration strategy for NSLDS II Release 1 involves:

- Converting the legacy NSLDS mainframe database to the NSLDS II data warehouse structure.
- Utilizing the EAI Bus to allow NSLDS II to interface with its internal and external interface systems.
- Supporting the use of legacy record formats and media (such as magnetic tape) for Release 1.

5.1 Data Conversion

5.1.1 Scope

The data conversion will extract, transform, load, and verify data from the Active Database and STAB Databases that comprise NSLDS into the reengineered NSLDS II. The data conversion process will be composed of phases that will require a design, development, and unit testing effort. Once the individual phases are developed and unit tested, a system test of the entire conversion process will occur.

Loan-level information for open and closed student/borrower accounts will be converted from the NSLDS Active Database to NSLDS II. STAB Database data will also be converted and loaded into NSLDS II. The Archive Database will not be converted, since it is not populated with data. As part of the NSLDS II data conversion, a strategy for archiving loan-level information for closed student/borrower accounts will be implemented, which will require data to be loaded into the NSLDS II Archive database during the conversion of the NSLDS Active Database.

To maintain data integrity during conversion, data validation checks will be preformed at several steps in the process. At each data validation point, data will be reconciled against the data in the legacy NSLDS.

The system test will involve the extraction, transformation, and load of actual data into NSLDS II. The goals of this system test are to uncover any errors in the process caused by data anomalies in the actual data and to establish time baselines for moving the data into NSLDS II.

5.1.2 Overview

NSLDS is updated daily through both internal and external interfaces as well as through the NSLDS Financial Aid Professional Web Site, CICS, and by the Raytheon Quality Assurance Team. The NSLDS data conversion will be broken into two separate conversions to ensure that all updates to NSLDS are included. The initial conversion will be comprised of NSLDS data prior to a specific date, or conversion date. The second conversion is actually a series of conversions that will load the interface files received post-conversion into the new NSLDS II. During the second conversion, information that has been updated through the NSLDS Financial Aid Professional Web Site, CICS, or by the Raytheon Quality Assurance team will be updated in

NSLDS II as well. The receipt of interface files and updates to the online systems will be tracked during the initial conversion to ensure the completeness of data for the second conversion.

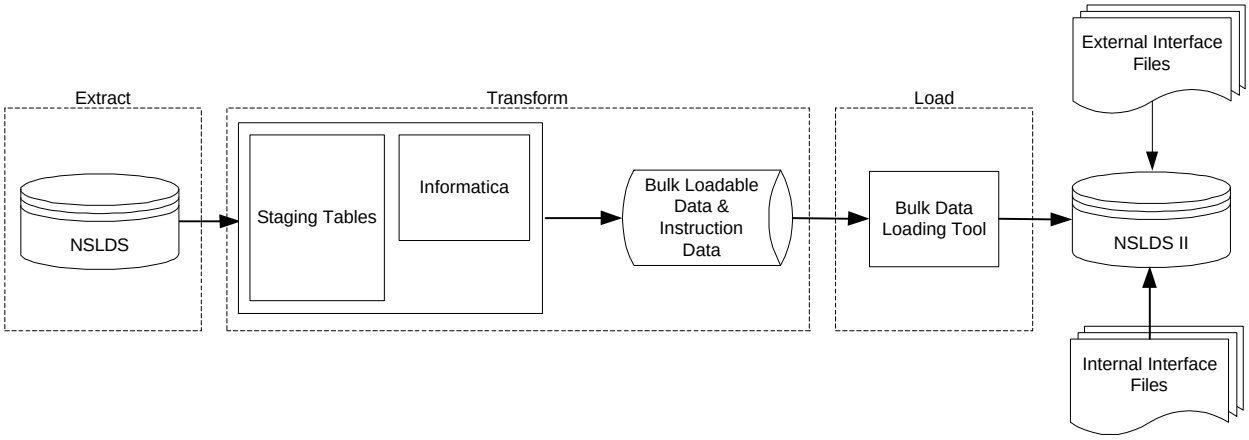

Figure 3, Conversion Process

The initial conversion process will be separated into three steps: extract, transform, and load. At several points during the ETL process the data will be verified to ensure that information is accurately reflected in NSLDS II. The secondary conversion will use the NSLDS II interface modules to load and verify the internal and external interface data.

5.2 Enterprise Application Integration (EAI)

Enterprise Application Integration is the integration of software applications across the enterprise. The objective of EAI is an automated, seamless interface among the applications that support the major business functions. Software packages that facilitate such integration are referred to as middleware. The middleware products selected to support the FSA technical architecture are MQSeries from IBM and Data Integrator from Commerce Quest. The use of EAI tools will enable NSLDS II to interface with both internal and external interface systems and support the use of legacy record formats.

Currently, internal FSA systems and external systems interface with the legacy NSLDS through one of four methods:

- EAI Bus (internal FSA systems only)
- FTP (internal FSA systems only)
- Tape-Stored Loads (both internal and external interface systems)
- Student Aid Internet Gateway (SAIG) mailbox (both internal and external interface systems)

The method of interfacing with the NSLDS II system will remain consistent for both internal and external interface systems. The exception to this is the use of FTP to interface with internal FSA systems. The use of FTP will no longer be permitted with the deployment of NSLDS II, and the role of the EAI Bus will be expanded. Internal FSA systems will now interface with

NSLDS II through the EAI Bus. Those interfaces presently using FTP will need to change their interface method for testing purposes by March 2003 and for production in time for the NSLDS II Release 1 deployment in September 2003.

5.3 Support of Legacy Record Formats

The first release of NSLDS II concentrates on re-platforming the system to a data warehouse architecture, and allowing for direct access to internal FSA systems using the EAI Bus. Legacy record formats will not be modified for Release 1, therefore interface systems may continue to send data to and receive data from NSLDS II using the same formats used for the legacy system.

The data mapping and record translation capability of Informatica PowerCenter will support the translation and load of the legacy-formatted data into the new warehouse database. This capability will be included with the initial deployment of NSLDS II Release 1.

6 Steps Needed For Interface Systems to Support NSLDS II

6.1 Internal FSA Systems

The use of FTP to interface with internal FSA systems will no longer be permitted with the deployment of NSLDS II. Internal FSA systems currently using FTP will be required to interface with NSLDS II through the EAI Bus. These interfaces will need to change their interface method for testing purposes by March 2003 and for production in time for the NSLDS II Release 1 deployment in September 2003.

Also, the record format used to send and receive data will be unchanged from the legacy system for internal interface systems (except the possible exceptions noted in **Section 7 Potential Impacts to Other FSA Business Processes and Systems**). Therefore, no changes are required to update record layouts for this release.

6.2 External Interface Systems

Access to the NSLDS II system and the record format used to send and receive data will be unchanged from the legacy system for external interface systems. Therefore, no action is required for these systems.

7 Potential Impacts to Other FSA Business Processes and Systems

7.1 Students Channel

7.1.1 CSfB

The Debt Collection System (DCS) is currently being looked at as part of FSA's Common Servicing for Borrowers (CSfB) initiative. Due to very recent changes in scope and timelines for efforts to reengineer DCS, its impact on NSLDS II is still uncertain. The NSLDS II team will work with CSfB project staff to determine potential interface impacts resulting from the eventual rollout of CSfB. As part of the first release of NSLDS II, submission of data weekly in tape format from DCS will be supported. Additional short-term initiatives to change the DCS to NSLDS II file transmission mechanism from tape to flat file over the EAI Bus will be investigated.

7.1.2 CRM4FSA

Discussions have taken place to possibly include an interface between CRM4FSA and NSLDS II beginning with CRM4FSA Release 4, currently scheduled for November 2003 (post Release 1).

In addition, it is assumed that the cost and operation of the Tier 1 and Tier 2 (as jointly defined by the NSLDS II and CRM4FSA teams) help desk for NSLDS II will transition to the CRM4FSA framework by May 2004, if not sooner. In the interim, a NSLDS II call center will be created as part of this release. It will be online at the time of implementation to handle NSLDS II specific trouble calls. Transition of resources from this call center to support the migration of services to CRM4FSA will also be coordinated.

7.1.3 CMDM

The reengineering of NSLDS into an enterprise data warehouse will have an impact on the Credit Management Datamart (CMDM). Impacts will not specifically be addressed in Release 1. If an impact exists, it may be addressed in a subsequent release.

7.2 Financial Partners Channel

The reengineering of NSLDS into an enterprise data warehouse will have an impact on the Financial Partner (FP) Datamart. Impacts will not specifically be addressed in Release 1. If an impact exists, it may be addressed in a subsequent release.

7.3 Schools Channel

It is expected that there will be no initial impact to the Schools Channel as a result of the NSLDS II Release 1 implementation.

7.4 Office of the Chief Financial Officer (CFO)

Discussions will occur between ED and the Modernization Partner to determine the possibility of providing Payment Reasonability enhancements to NSLDS II that would enable comparison of payment information submitted to the FSA financial system to data provided to NSLDS II.

7.5 Office of the Chief Information Officer (CIO)

The implementation of Release 1 will contain technology new to the FSA architecture. The use of an IBM DB2 EEE data warehouse (hardware and software) does not currently exist at the FSA hosting site, and will require the assistance of the CIO Organization to facilitate the proper integration of this new technology into the FSA hosting site.

Following the deployment of NSLDS II Release 1, the new data warehouse will be the database of record and the legacy NSLDS system will be retired. This deployment and retirement are currently scheduled for September 2003.

8 Changes to Regulations and Statutes

FSA is responsible for identifying changes to regulations and statutes. The Policy Development Division (PDD) members working with the NSLDS II team would suggest any required changes. No regulatory or statutory changes are expected prior to the implementation of NSLDS II Release 1.

Yearly regulatory and statutory changes are expected and will be addressed as necessary. It is anticipated that a portion of the yearly NSLDS II maintenance budget will be used to address necessary changes precipitated from these changes. The Modernization Partner NSLDS II team will work closely with FSA and the Office of Postsecondary Education (OPE) to address any concerns.

9 Project Resources

The following tables list the resource types required by FSA and the Modernization Partner to implement NSLDS II. Beyond the roles outlined in this section, other key project documentation such as the NSLDS II Reengineering Project Plan may contain more detailed information regarding the roles and responsibilities associated with the project.

9.1 FSA

FSA will perform the following roles:

Role	Description
FSA Executive Sponsor	The Executive Sponsor is the FSA representative with overall responsibility for the development project.
eCAD Team Representative	The eCommerce Application Development (eCAD) representative ensures the delivery of quality e-business solutions by acting as technical liaison between Business Channel Unit and CIO, providing program management support and technical advisory focus, sponsoring and design of FSA Solution Life Cycle and Capability Maturity Model (CMM) processes, and providing independent quality assurance support and post-implementation systems reviews.
CIO IT Business Services Team Representative	The Information Technology (IT) Business Services representative provides the CIO with the necessary organizational management and program management capabilities to integrate the mission of the CIO with the mission of the FSA enterprise. The IT Business Services representative assures compliance with legislation, rules, and guidelines impacting its operations. The IT Business Services organization is also responsible for managing the Modernization Partner contract, and publishing the FSA Modernization Blueprint and the FSA Technology Handbook.
CIO IT Management Team Representative	The IT Management representative guides the use of information technology to maximize the value that it contributes toward the strategic business objectives of FSA. The IT Management team provides the following services: • Defines, publishes, and updates IT architecture, and data management, technology, and information security policies and standards • Defines and builds data warehouse architecture, data models, and infrastructure technical attributes • Performs Enterprise Architecture Management • Participates in and supports Integrated Product Team activities An IT Management Database Administrator (dBA) will be needed to assist the NSLDS II Modernization Partner team with the design and deployment of the new data warehouse model.

Role	Description
System Security Officer	The System Security Officer enforces the FSA security policies and standards on the project and enterprise level, and assists the project team with the development of the project security model and system security documentation.
FSA QA Representative	The FSA Quality Assurance (QA) representative coordinates QA functions for FSA.
FSA IV&V Contractor	The IV&V contractor provides project level quality assurance and internal verification and validation (IV&V) functions for FSA.
FSA Subject Matter Experts	FSA Subject Matter Experts provide thought leadership and insights in a specific subject or area (e.g., student aid eligibility, cohort default rate calculation and distribution, research and policy development, etc.).
FSA hosting site Account Executive	The Account Executive represents the FSA hosting site in matters of funding and procurement of resources required by the project team. The procurement of resources will involve input from the Modernization Partner NSLDS II management team.
FSA hosting site Service Delivery Manager	The Service Delivery Manager serves as the main point of contact between the FSA hosting site and the project development team for development and production environment requests, change requests, and production readiness.
FSA hosting site Technical Team Resource	The Technical Team resource completes the change requests on the environments at the FSA hosting site. This resource will require skills including data warehousing, networking, interfacing, and EAI.

Table 8, FSA Roles

9.2 Modernization Partner

The Modernization Partner will perform the following roles:

Role	Description
Engagement Partner	The Accenture Engagement Partner has overall responsibility for the work performed on the Modernization Partner engagement.
Project Partner	The Accenture Project Partner has overall responsibility for the work performed on the NSLDS II project.
Client Quality Management Assessment (CQMA) Partner	The CQMA Partner is an external, objective Accenture Partner who has vast client engagement experience and serves as an advisor to the Engagement Team to help them achieve success for the client and Accenture. Some CQMA Partners may choose to include outside experts.

Role	Description
Project Manager	The Project Manager is the Task Order lead and is responsible for: • Developing, implementing, and maintaining the Project Plan • Implementing project management processes such as scope management / change control, risk management, quality management, and configuration management according to the project plan • Managing the success of metrics defined by the project and the organization • Representing the project in client meetings to report progress and communicate issues and risks that will impact schedule • Resolving issues and / or escalating issues to the appropriate level to be resolved • Negotiating changes to commitments / requirements
Design / Delivery Manager	The Design / Delivery Manager reports to the Project Manager and is responsible for: • Overseeing the activities of the Transactional Requirements and Interfaces / Edits team, the Analytical Requirements team, the System Test team, the Conversion team, and the Implementation team • Ensuring that team members receive the training needed to perform their tasks • Meeting team project metrics as defined by the project and the organization
Technical / Architecture Manager	The Technical / Architecture Manager reports to the Project Manager and is responsible for: • Overseeing the activities of the Data Warehouse / Analytical Tools team and the Bus / Source System team • Selecting and documenting the technical architecture • Developing the NSLDS II data model • Owns the relationship between the NSLDS II Modernization Partner team and FSA hosting site • Ensuring that team members receive the training needed to perform their tasks • Meeting team project metrics as defined by the project and the organization

Role	Description
Team Lead	The Team Lead reports to either the Design / Delivery or Technical / Architecture Manager and is responsible for: • Supervising analysts within the project • Managing and completing the team's tasks in the project plan • Facilitating the discussion and resolution of issues with the client or the project management as appropriate The following teams exist within the NSLDS II organizational structure, however the Design / Delivery manager and Technology / Architecture manager may serve as the Team Lead in some instances: • Design / Delivery - Transactional Requirements and Interfaces / Edits - Analytical Requirements - System Test - Conversion - Implementation • Technology / Architecture - Data Warehouse / Analytical Tools - Bus / Source System
Analyst	The Analyst reports to a Team Lead and is responsible: • Completing deliverables and documentation • Becoming proficient in appropriate project technologies • Developing strong functional and technical knowledge
Developer	The Developer reports to a Team Lead and is responsible for: • Programming, unit testing, and integration testing of the system's components • Becoming proficient in appropriate project technologies • Developing strong functional and technical knowledge
Data Architect	The Data Architect reports to the Technology / Architecture Manager and is responsible for: • Data Warehouse analysis, design, and development • Database administration (performance, storage, etc.)
System Security Analyst	The System Security Analyst reports to the Technology / Architecture Manager and works with the FSA System Security Officer to develop the project security model and complete the NSLDS II System Security documentation.
Technical Architecture / Environment Support	The Technical Architecture / Environment Support resource is responsible for: • Environment setup and troubleshooting • Assisting with the performance test • Assisting with the database conversion

Role	Description
Training and Communications Analyst	The Training and Communications Analyst will report to the Design / Delivery Manager and is responsible for: • Design, development, and testing of training and education programs • Design and development of the communication strategy • Implementation of training, education, and communication programs
Quality and Process Improvement (QPI) Liaison	The QPI Liaison assists the project with the implementation of CMMI Level 3 requirements and software quality assurance best practices.

Table 9, Modernization Partner Roles

10 End User Training Plan

As part of the Build stage, a formal end user training plan will be developed. The actual timing of this document will be determined at a later point, allowing the rework involved to be kept to a minimum.

Within this plan, the following steps will be laid out. These steps are designed to assist the user community with the transition to the new NSLDS II system and to enable them to use the new technology.

- A gap analysis will be performed to determine the differences between the new processes and technology and the existing processes and technology. Training, education, and communication requirements will be identified to mitigate the gaps discovered in this analysis.
- Training and education programs will be designed, and a communication strategy determined.
- Training and education programs will then be developed and tested, and communications will be developed, reviewed, and distributed to inform the user community of the coming transition and the training that is available.
- FSA trainers will learn the training through "Train the Trainer" sessions, provided by the Modernization Partner team. FSA will then provide the training and education programs to the user community.

11 Implementation Risks

#	Risk	Impact	Potential	FSA/Mod Partner Ability to Control	Mitigation Strategy
1	The scope of ongoing maintenance to legacy NSLDS still includes non-break-fix activity. Scope slippage may occur if new development is approved on the legacy application.	High	High	High	- Work closely with NSLDS and NSLDS II FSA project management to coordinate all development efforts to legacy NSLDS and their impact to NSLDS II - Limit legacy NSLDS scope to break-fix, essential development only
2	The ability to identify impact areas with NSLDS II interfacing systems or groups.	High	High	High	- Involve key stakeholders - Early in Detailed Design, standing meetings will occur with major Modernization Partner reengineering efforts - Identify and communicate level of impact within an appropriate time frame
3	The NSLDS II team is implementing a new technology for FSA.	High	Medium	High	- Apply lessons learned from Modernization Partner and industry practices - Obtain resources with the proper skill set based on the technical architecture selected - Verify that proper training is developed and conducted

#	Risk	Impact	Potential	FSA/Mod Partner Ability to Control	Mitigation Strategy
4	The FSA hosting site is supporting a new technology for FSA. Support for the new environments and architecture will begin in October 2002.	High	Medium	High	- The FSA hosting site will obtain resources with the proper skill set based on the technical architecture selected - The FSA hosting site will verify that proper training is developed and conducted
5	A Lack of FSA, Raytheon, and external interface system resource availability in the Detailed Design stage may lead to missing functionality and training requirements.	High	Medium	High	- Identify specific FSA, Raytheon, and external interface system full-time staff to support NSLDS - Use FSA, Raytheon, and external interface system resources as subject matter experts - Identify the specific processes and system functions to be included within NSLDS II Release 1. Extensions to this will be considered enhancements and will require a modification to the existing Task Order or a new Task Order.

#	Risk	Impact	Potential	FSA/Mod Partner Ability to Control	Mitigation Strategy
6	The technical environments (development, test, production) may require greater than 90 days to setup	High	Medium	Medium	- Provide environment specifications to the FSA hosting site as soon as they are finalized - Begin the procurement process once the technical architecture decisions are finalized and the vendors are selected - Potentially begin development on a different server. IBM will be loaning the Modernization Partner a development database server to use prior to procurement.
7	The hardware required for the implementation of NSLDS II will be procured by the FSA hosting site, rather than the Modernization Partner	Medium	High	High	- Maintain close contact with the FSA hosting site and the external vendor to facilitate communication and requirements - Coordinate closely with the Modernization Partner VDC Liaison and the ITA Team

#	Risk	Impact	Potential	FSA/Mod Partner Ability to Control	Mitigation Strategy
8	The NSLDS II project may encounter cost overruns due to: - Rework; - Expanding scope; and - Delays in receiving approval of deliverables or resolution of issues	Medium	Medium	High	- Develop / use existing standards including CMMI - Maintain close coordination between the project team and those responsible for approvals and resolutions - Provide sufficient lead time for the stakeholders to comment on documentation and provide resolutions to issues

Table 10, Implementation Risks

12 Next Steps

- Begin procurement of NSLDS II hardware and software.
- Finalize the technical architecture and the development and test environment requirements, and provide them to the FSA hosting site for setup.
- Begin the Construction phase to further detail the tasks listed in the implementation plan, including functional design, technical design, data conversion, and security.